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TECHNOLOGY DEPT.

SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE • OCTOBER 31, 1942

Indian Summer

See Page 285

A SCIENCE SERVICE PUBLICATION

Do You Know?

War and war work will require 30 million people by the end of of 1943.

Some *slime-molds* are known to crawl at the rate of two centimeters per minute.

The *duck hawk* has been clocked flying at from 165 to 180 miles per hour.

Arsenic applied to the skin acts as a caustic and causes a violent inflammation.

In pre-war days the U. S. fishing industry ordinarily used about 1,600 long tons of *tin* annually.

Pyrethrum, the widely used insecticide, kills by contact but is not generally effective as a stomach poison.

It has been found that intensive *Vitamin A* treatment relieves nystagmus, an occupational disease which affects miners.

Five-sixths of the *gasoline* used in an automobile sedan speeding at seventy miles an hour is spent to overcome wind resistance.

Cornstalks, wheat straw, banana skins, and peanut shells can be subjected to bacterial decomposition and serve for *fuel* on the farm.

Lacking gasoline or motor cars, Chilean nitrate miners are now *sailing* on wheels to work and back; the desert wind, blowing east at dawn and west at sunset, fills the sails hoisted on their cars and wagons.

White Leghorns require less vitamin B than the other known breeds of chickens.

Shortage of drinking glasses in England has brought 17th-century-style *pottery mugs* back into favor.

Death from *heat prostration* was recently judged by a court as a "compensable injury," for which insurance must be paid.

Brown-shelled eggs have a higher breaking strength than those that are white-shelled.

Dwarf forest trees in many mountainous regions are two to three hundred years old but only a foot high.

The odor of *apples* is due chiefly to their content of amyl esters of formic, acetic, caproic, caprylic acids, and acetaldehyde and ethyl alcohol.

Question Box

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Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

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NUTRITION

Butter Is Better

Even apart from vitamin content, new experiments show butter fat is superior to vegetable oils for nourishing children.

➤ EXPERIMENTS showing for the first time that butter fat, apart from its vitamin content, is superior to vegetable oils for nourishing the young were reported by Dr. E. B. Hart, of the University of Wisconsin College of Agriculture, at the meeting of the American Public Health Association in St. Louis.

The experiments show also, Dr. Hart declared, that " 'filled milk' should not be allowed to get into the channels of infant and child nutrition."

Even when vitamins A, D and E were added to vegetable oils, he reported, there was inferior growth of weanling rats fed on them. Not only do the rats on butter fat grow better, but they look better. When kept for reproduction studies, marked superiority in numbers born and reared results. Similar results were obtained fom experiments with calves at the University of Minnesota.

Butter's superior nourishing quality for the young, Dr. Hart discovered, is due to a saturated fatty acid (or acids) of high molecular weight which is not present, at least in quantity, in the vegetable oils he investigated. These included corn oil, cotton seed oil, soy bean oil and cocoanut oil. This fatty acid factor in butter is not the same as the unsaturated fatty acids, like linoleic acid, which are found in vegetable oils and have also recently been declared essential for health.

The discovery some 20 years ago that milk fats were superior to vegetable oils because they contained vitamin A led to state and Federal legislation prohibiting the manufacture of "filled milk," which is milk that has its butter fat removed and replaced by vegetable oils.

"Within the last few years those who would like to make a filled milk have learned how they can add vitamins A and D to these vegetable oils and then claim a nutritive value of the product equal to that of milk," Dr. Hart declared. "By getting out an injunction against the enforcement of 'the filled milk' legislation and prohibiting the enforcement of the law, these companies have succeeded in distributing very considerable quantities of 'filled milk.' In some states decisions in reference to the validity of the 'filled milk' legislation are pending. In other states licenses are given allowing the manufacture of 'filled milk,' but with an imposed tax."

"Filled milk," he continued, may be "a healthful food but show some deficiencies, just as do many of our staple foods; but where a food becomes the sole nutrient of the young, such as whole milk does, then the commercial distribution of an inferior substitute should be prevented."

Whole milk, he declared, needs only the addition of iron, copper, manganese and vitamin D to make it complete food for growing youngsters. For grown-ups it can serve for complete nutrition for a long time without any fortification, as evidenced by the record now available of a grown woman who lived between three and four years in perfect health on whole milk only.

Science News Letter, October 31, 1942

Wide Protection

➤ HOPE that the T.A.B. vaccine against typhoid and paratyphoid fevers given men in the U. S. Army may protect the men from a number of other diseases caught through contaminated food and drinking water appeared in the report of Lieut. Col. Don Longfellow, M.C., and Major George F. Luippold, S.C., U. S. A.

Their laboratory experiments showed that this vaccine produces in the blood of vaccinated persons protective substances against not only many strains of typhoid fever germs but also against some of the germs which cause food poisoning and some germs believed capable of causing diarrheal diseases.

Proof that the vaccine will actually protect men in the field against these diseases as well as typhoid fever, which it does protect against, will not be available until after records on several years' experience come in. Consequently the Army medical officers are cautious about saying too much for the vaccine other than that it protects against typhoid.

Science News Letter, October 31, 1942

FOR SKY JUMPERS—Each parachute is periodically aired and inspected. These precious silk parachutes suspended from the umbrella-like frame are hanging in the loft of the Norfolk Naval Operating Base. The picture is an official U. S. Navy photograph.

NUTRITION

Pink Flesh of Fish Contains More Vitamin A

➤ PINK-FLESHED trout, and presumably other fish also, contain more vitamin A than white-fleshed, Dr. C. H. Clausen, of the University of Colorado School of Medicine, reports on the basis of preliminary experiments.

His discovery came in studies undertaken at the request of Director C. N. Feast, of the Colorado Game and Fish Department, who wanted to know why flesh of the same sort of fish, such as brook or rainbow trout, may graduate from white to a deep clear pink.

The pink flesh contains more vitamin A than the white flesh, and Dr. Clausen also found more vitamin A in the flesh of crustacea, main food of the trout, which lived where the pink-fleshed fish do.

Dr. C. E. Hagie, educational manager of the department, points out that foods rich in vitamin A, fed to trout in ponds where they are reared tame for the table, may help pond-owners produce only pink-fleshed fish, which are considered more attractive, as red salmon are considered more attractive than those with paler meat. Experiments are being continued.

Science News Letter, October 31, 1942

ASTRONOMY

Finns Find Comets

One turns out to be often-mistaken Schwassmann-Wachmann 1, but the other is new. News came by postcard that travelled for eight months.

➤ APPARENTLY a cablegram sent to Harvard College Observatory last February failed to reach there, for it was not until this month that Harvard Observatory received four routine post cards mailed from the international astronomical union headquarters in Copenhagen last spring.

The first of these, circular 900, tells of the discovery of a new comet by Miss L. Oterma at Turku Observatory in Finland. The card is dated February 20, but she made the discovery on February 12. The comet was of the 15th magnitude, which puts it beyond the observation of amateur telescopes. But it is just as important to astronomers as though it were of naked eye brilliance. The other three post cards, circulars 901, 902, and 903, contain further observations of the new comet and a prediction of its future positions.

By a strange coincidence, circular 901 also contains a complete series of predicted positions for comet Schwassmann-Wachmann 1, but the European astronomers apparently overlooked it completely this September, for on Sept. 11 the observatory at Lund, Sweden, sent a wire to Harvard that a new comet of 13th magnitude had been discovered, also by Miss Oterma. However, this turned out to be in precisely the position predicted by circular 901 for comet Schwassmann-Wachmann 1. This occasioned the remark by an American astronomer that this comet ought to carry a red flag, so often has it been mistaken for a new one.

From the elements published by the Turku Observatory on the comet discovered last February, Dr. F. L. Whipple of Harvard computes its position to be in the constellation of Cancer, the crab, just east of the cluster which is visible to the naked eye. A powerful telescope would be needed to detect the new comet as it should still be about 15th magnitude. On October 24, its predicted position was in right ascension 8 hours 36 minutes and declination plus 20.3 degrees. Cancer rises in the eastern sky about midnight during the next month.

Science News Letter, October 31, 1942

PUBLIC HEALTH

Program for Safety

➤ A GRAPHIC DESCRIPTION of the dangers connected with the handling of metals in American industry and the suggestion of an eight-point program to eliminate them were made by Dr. Robert A. Kehoe, of the University of Cincinnati College of Medicine, at the meeting on Industrial Health and Medicine in Wartime in the Yale School of Medicine, New Haven.

"In a large measure this is a war of metals," said Dr. Kehoe, "and metals are being used increasingly for the weapons of war, the machinery to make those weapons and in chemicals for certain purposes.

"The toxicity of metals is not always well understood but it is at least clear that some metals combine with the essential components of protoplasm, thus interfering with the workings of body cells.

"Some metals are poisonous because they form volatile chemical compounds which can be inhaled in high concentrations, notably arsine from arsenic. Others are poisonous because they are easily soluble in watery liquids and dissolve readily in the intestinal juices, becoming easily absorbed in the bloodstream. Again, a metal often occurs in combination with a more toxic substance and may be less hazardous than its partner—for example, lead arsenate."

He pointed out that once metals are inside the system, they are redistributed throughout the body in certain organs. Among these the liver is preeminent and in the case of more prolonged storage, the bony skeleton may become the most important storage depot.

How long metals remain stored depends on a number of factors, including rates of breakdown of chemical compounds, rate of metabolic renewal of the tissue involved, and the form in which the poison occurs.

Variations in the poisonous effect of metals depend on abnormally high concentrations, marked individual differences among men and the type of compound in which the metal occurs.

Dr. Kehoe outlined means of measuring the degree of exposures in terms of the toxic metal concentration, correlating these measurements with physiological effects and finding the established limits of safety.

He said that exposure can be controlled with the following eight practices: 1. plant design to segregate more hazardous operations; 2. enclosed operations and properly designed equipment; 3. adequate ventilation with air-conditioning wherever possible; 4. housekeeping and maintenance; 5. protective equipment and sanitation; 6. instruction and regulations; 7. supervision of work and workmen; 8. general hygienic instruction of workmen.

Science News Letter, October 31, 1942

NUTRITION

Walnuts Found To Be High in Vitamin C

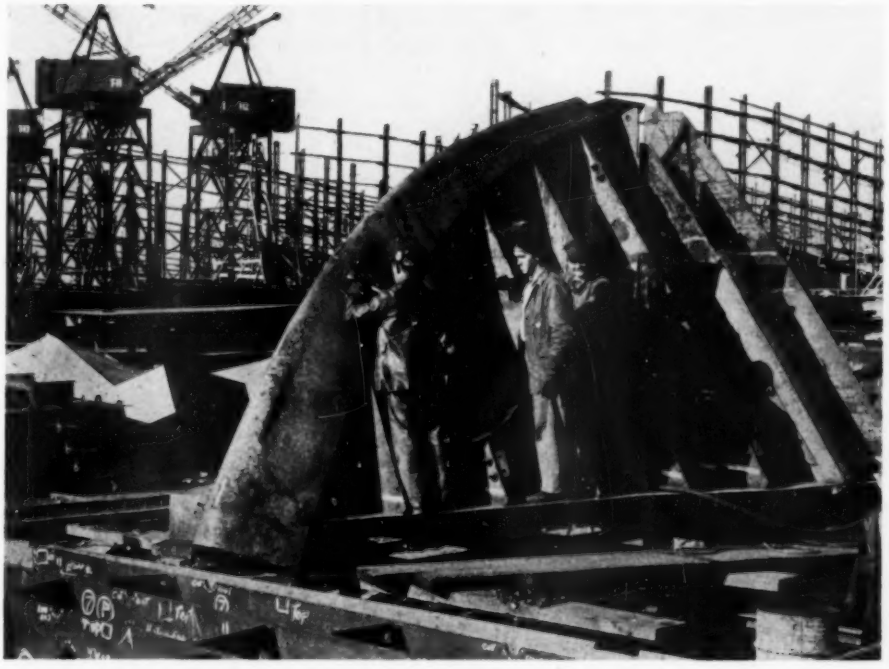
➤ TWICE the amount of vitamin C you need for a day is contained in a single pickled walnut weighing slightly over half an ounce, three English scientists, Magnus Pyke, Ronald Melville and Henry Sarson, report to the English scientific journal, *Nature*.

Here in America with abundant supplies of oranges, tomatoes and other fruits and vegetables, we do not need to worry much about sources of this vitamin, needed to prevent scurvy, but in England since the war housewives have had to turn to home-grown sources of the vitamin, such as rose hips and black currants.

The fact that unripe walnuts contain large amounts of vitamin C was apparently first discovered by a Russian scientist. The English scientists examined other kinds of nuts, including hickory, almond and horse chestnuts, but none of these contained as much vitamin C as walnuts. The vitamin content of the nut is at its highest at the stage of development when the kernel is soft and just before the formation of the shell.

Weight for weight, walnuts contain about 24 times as much vitamin C as orange juice, according to the English report.

Science News Letter, October 31, 1942



PRE-FABRICATION—To speed the flow of ships off the shipways, whole sections of the hull are now assembled before they are lifted into place. This is an official U. S. Maritime Commission photograph.

NUTRITION

Beef for the Unborn

Experiments with rats indicate that "complete reproductive failure" results when mother animals lack meat. Deficiency not made up by pork.

➤ TOXEMIA of pregnancy, a serious condition with excessive vomiting and convulsions which sometimes afflicts expectant mothers, may be due to lack of a diet factor found in beef but not in pork.

Experiments suggesting this were announced by Dr. Pearl P. Swanson, of Iowa State College, to the American Dietetic Association, meeting in Detroit. Dr. Swanson's experiments were made with laboratory rats and were planned to show the role meat may play in the rat's nutrition. Instead, they may lead to solution of what has been called the unsolved riddle of the gynecologist.

"Complete reproductive failure" resulted when rats were put on diets containing either beef or pork equivalent to 15% of protein. Increasing the pork in the diet to 30% caused very little improvement. Almost half (40%) of the mother rats died of "pregnancy disease," an ailment with all the characteristics of toxic pregancy in human mothers. Those rats that survived gave birth to dead offspring, or could not nurse their offspring, and the second and third generations were sterile.

A diet containing 30% of protein in the form of dried autoclaved beef, however, supported life for six generations. Beef apparently possesses certain nutritive qualities not characteristic of pork. The dietary difference seems to be due to the presence in beef of a factor important for bearing and nursing offspring.

Science News Letter, October 31, 1942

Restaurant Eaters Short

➤ THOSE WHO eat in restaurants, even the best of them, are being deprived of about three-fourth of the vitamins they should be getting from vegetables. Actual figures on vitamin losses from restaurant-cooked vegetables were reported by Dr. Robert S. Harris, of Massachusetts Institute of Technology. Eat early and concentrate on raw vegetables, Dr. Harris advised restaurant eaters.

In his study, Dr. Harris selected a restaurant using superior cooking and serving technics. In spite of this, the average loss of anti-scurvy vitamin C from vegetables during cooking was 45%, and the loss of thiamin (vitamin B_1) averaged 35%.

The large loss was attributed both to the destruction by heat and to the fact that the cooking water in which the vitamins are soluble was discarded. During the time the vegetables were held on the steam table before serving there was a further vitamin loss of about 15%. Only about one-fourth the original vitamin content of the vegetables actually reached the consumer.

It is evident, Dr. Harris pointed out, that the customers who eat earlier and who eat more raw vegetables will be better fed. While the restauranteur cannot be expected to furnish short order cooking, he can be taught that it is advisable to cook food carefully and not too long before serving. Research is needed to determine the best methods of cooking and keeping foods warm when served in large quantities.

Science News Letter, October 31, 1942

Three-Cent Soup Mix

➤ LATEST addition to large-scale, low-cost, high nourishment feeding is a three-cent soup mix announced by Dr. Robert S. Harris, of Massachusetts Institute of Technology, at the meeting of the American Dietetic Association in Detroit.

Made of skim milk powder, peanut flour, soya flour and peas, the soup mixture is inherently rich in good protein and in vitamins of the B complex. It will be possible to supplement it with minerals and with natural and synthetic vitamins so that each ounce can supply the full day's allowance of these diet essentials. A full day's portion can be supplied at a cost of two to three cents.

The mixture is ready to serve, so will not be subjected to the destructive effects of cooking. All the materials are available in large quantities which will make it possible for the soup to be used on a national or international scale. Used as a stock to which meat and vegetables may be added, it provides the possibility of great variety in a school lunch menu.

A field study conducted in six schools in small communities in Michigan

showed that the soup was palatable as 426 children consumed it daily for three months and showed no evidence of tiring of it. There were significant improvements in the group to which the soup was given in comparison with the control group who ate the usual school lunch. These improvements included a better ascorbic acid (vitamin C) and iron status and some improvement in weight and riboflavin status. The study showed that the hot school lunch previously supplied was not properly supplementing the home dietary.

Science News Letter, October 31, 1942

PUBLIC HEALTH

Prostitutes Blamed

Suppression near Army camps held essential to the control of venereal disease. Cleaning up of El Paso and Juarez brings new all-time low in rate.

➤ SUPPRESSION of prostitution is essential for control of venereal disease, two medical and health authorities declared at the meeting of the American Public Health Association in St. Louis.

"Some persons in charge of important medical and public health activities of official agencies, civilian as well as military, are not yet convinced of the desirability of suppression of prostitution as an element of a venereal disease control program," Dr. Theodore Rosenthal of the New York City Health Department charged.

"Proper information on the value of this phase of venereal disease control is essential."

The information, in the shape of a report showing how venereal disease rates dropped among soldiers at Fort Bliss, Texas, when prostitution in the vicinity was suppressed, was furnished by Dr. Bascom Johnson, Jr., U. S. Public Health Service officer assigned to the El Paso, Texas, City-County Health Unit.

Fort Bliss, an expanding military cantonment with many thousands of troops, he explained, is located within a short distance of El Paso which is within easy walking distance of Juarez, Mexican border city just across the Rio Grande.

"When this study was started," he stated, "commercial prostitution was flourishing both in El Paso and in Juarez. There were nine well known houses of prostitution in El Paso under police surveillance, and in some respects, almost under police protection. The women in these houses were being examined once a week in the City police department by local health department personnel.

"During this period almost 75% of the Army's infections were found to be coming from houses of prostitution. Fifty-seven per cent were apparently contracted in El Paso, the remaining 43% was fairly even divided between Juarez, Mexico, and communities outside the El Paso-Juarez area. However, of 155 cases contracted in El Paso fully 84% was said to be acquired in the nine houses of prostitution where the women were being examined once a week.

"There followed a period when El Paso's houses were closed but flagrant prostitution conditions remained readily accessible in Juarez, Mexico. The percentage of venereal infections coming from El Paso decreased about 25% but the percentage coming from Juarez increased almost an equal amount. It was impossible to demonstrate any decrease in Army venereal rate which could be attributed to the improved conditions in El Paso.

"After war was declared, the International bridge to Juarez was closed to American soldiers on Dec. 8, 1941. It remained closed for 82 days. During this period the Army venereal rate which had previously averaged 64 for a 17-month period dropped to 36. On Feb. 28, 1942, due to diplomatic pressure, the bridge was reopened to soldier traffic and the venereal rate went up again to 60. On June 19, 1942, a policy of repression of prostitution was started in Juarez. Since then the Army venereal rate has gradually declined again. The rate for July, 1942, reached an all time low of 28 cases per 1,000 men per annum.

"If open houses of prostitution are tolerated in the vicinity of an Army camp," Dr. Johnson declared, "they will in all probability prove to be a major source of venereal disease infection among the troops."

Contrary to one of the standard arguments against suppression of prostitution, closure of the houses did not, so far as Dr. Johnson could find, cause any widespread dissemination of these women throughout the community. According to the statements of the prostitutes themselves, the vast majority leave town as soon as the "heat is turned on."

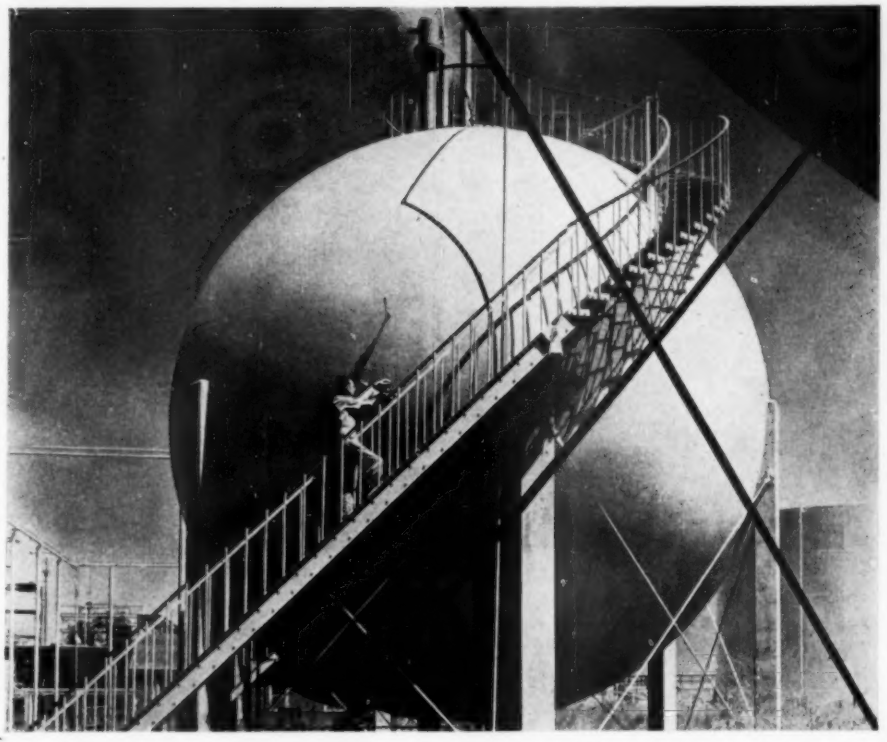
As the prostitutes are eliminated, the "non-prostitute pick-up" or "chippie" becomes more important as a source of venereal infection, Dr. Johnson stated. An attempt is now being made in El Paso to set up a redirection program for these borderline prostitutes. Sociological studies are badly needed, Dr. Johnson declared, to help health and social workers solve the border-line prostitute problem.

Science News Letter, October 31, 1942

The 1942 production of *bituminous coal* in the United States is expected to reach approximately 560,000,000 tons, and that of anthracite more than 58,000,000 tons.

A German manufacturer has designed detachable extra *wing-tips* which aid the take-off of heavy aircraft, and are dropped off when the plane is in flight.

SEGREGATION — Through many miles of pipes like these, crude oils are segregated. The operator in the foreground is opening a valve to let a certain batch of crude flow to its destination at a Standard Oil Company (New Jersey) refinery.



FOR PRESSURES—Huge hollow steel balls like this are necessary to store the highly volatile products used in making 100-octane aviation gasoline. This is a Standard Oil Company (New Jersey) photograph.

CHEMISTRY

Dye from Sassafras

Simple and economical method of getting coloring matter from root bark may lead to substitution for coal dyes now war-short. Tan, brown and gray obtained.

➤ DISCOVERY of a simple and economical method of obtaining natural dye from the root bark of the sassafras tree has been announced by Dr. Arthur C. Shead, associate professor of chemistry at the University of Oklahoma. Dr. Shead stated that the discovery might lead to the eventual replacement of some coal dyes of which there is a present shortage.

Colors obtained from the dye are tan, light and dark brown, rose brown and a close resemblance to pearl gray. The shades are varied by the concentration of the dye and the kind of mordant used.

The nation is returning to the use of natural dyes in the present war, according to Dr. Shead, just as it did in World War I. The reasons for the present shift, however, are different from those of the last war. In 1917-18, America had to turn to natural dyes because the German synthetic market was cut off as a source of supply. In this conflict, ways of making the synthetic dyes are known in the United States, but there is a shortage of chemicals which are used in processing the synthetic coloring agent.

That the dye is present in sassafras root bark is not a new discovery in itself. Pioneer women often colored their clothes by boiling them in a solution of the root bark and water. However it was a slow and tedious process and impractical for many types of material.

The new process of extracting the dye, discovered by Dr. Shead, is so simple that a high school chemist could make the dye from the articles, sassafras root bark and ammonia, found in many homes. The residue from the distillation of sassafras oil is put into a solution of ordinary household ammonia. The dye is extracted by the ammonia's action and is then precipitated with acid.

If the dye could be produced on a commercial basis, it might become the nucleus of a new industry. The sassafras tree is found growing abundantly in the midwestern states of Oklahoma, Arkansas and Texas and grows in parts of every eastern state. It will grow abundantly wherever there is sufficient rainfall and will thrive on land that has lost its fertility for general farm purposes.

Science News Letter, October 31, 1942

PLANT PATHOLOGY

Microscopic Worms Are Champion Chiselers

➤ MICROSCOPIC in size, but champion chiselers just the same, are the larval roundworms that cause the destructive and costly plant disease known as root-gall or root-knot. Details of their method of attack have been studied by Dr. M. B. Linford of the University of Hawaii, with an eye to the eventual development of control means. (*Phytopathology*).

Dr. Linford placed a number of the tiny pests, along with a lettuce rootlet, in a drop of water under a microscope magnifying them 600 times. This made them appear about as big as medium-sized earthworms, so that their activities were easy to follow.

One of the wormlets would push its sharp snout against a cell at the surface of the root, and start jabbing away with its long, needle-like tongue. At the outset, Dr. Linford counted 52 strokes in 30 seconds; then the worm warmed up to its work and hammered faster.

Finally the cell wall was pierced. The worm then rested from a quarter to half a minute, after which it proceeded to suck the cell juices. Then it moved on to another cell and repeated the performance.

The lumpy growths on the roots, which give the disease its names, are produced when the roundworm chooses to penetrate into the root, boring from cell to cell as a house-wrecker might go through the rooms of a house by breaking through wall after wall. The worm's saliva, released while feeding, slows the root's growth in length but stimulates side growth, causing the galls or knots. These harm the plant by hindering the transportation of water and soil nutrients from roots to top, also by making it easy for other disease organisms to attack.

Science News Letter, October 31, 1942

MORE THAN $14,000 IN SCHOLARSHIPS AND TRIPS TO WASHINGTON

THE SECOND ANNUAL

Science Talent Search

Conducted by Science Clubs of America for the

WESTINGHOUSE SCIENCE SCHOLARSHIPS

Forty boys and girls will win all-expense trips to the Nation's Capital and scholarships in the Science Talent Institute. Of these, one boy and one girl will be selected as winners of the two $2,400 WESTINGHOUSE GRAND SCIENCE SCHOLARSHIPS, eight more of the forty boys and girls will be selected to receive WESTINGHOUSE SCIENCE SCHOLARSHIPS of $400 each, and $3,000 more in WESTINGHOUSE SCIENCE SCHOLARSHIPS will be awarded at the discretion of the judges. Every one of the 40 boys and girls will, when in Washington, be awarded the Gold Emblem of Science Clubs of America.

Rules and Regulations

THE SECOND ANNUAL SCIENCE TALENT SEARCH CONDUCTED BY
SCIENCE CLUBS OF AMERICA, FOR THE
WESTINGHOUSE SCIENCE SCHOLARSHIPS

ELIGIBILITY

Any boy or girl who is now a senior (12th grade) in a secondary school (public, private, parochial) in continental United States is eligible to enter this competition. Anyone who competed in the First Annual Science Talent Search is ineligible.

Age—There are no age limits in this competition.

Science Clubs of America—It is not necessary to be a member of Science Clubs of America to enter this competition, although creative activity in a Science Club will aid a contestant's record.

Scholastic Record — Each contestant must be able at graduation to meet college entrance requirements.

REQUIREMENTS

1. Each contestant must take the "Science Talent Search" examination administered in his school on or after Friday, December 4, 1942.

2. Each contestant must submit an essay.

3. Certifying teachers must fill out in each examination blank a scholarship record and personal record.

4. All entries must reach the offices of Science Clubs of America, 1719 N Street, N. W., Washington, D. C., not later than midnight Monday, December 28, 1942.

Science Talent Search examination and record blanks are furnished free of charge to any school official requesting them.

The essay shall be of about 1,000 words in length on the subject: "Science's Next Great Step Ahead." It should be original and creative in character.

AWARDS

Forty contestants with highest talent as judged by a judging committee on the basis of Science Talent Search examination, scholastic and personal records, and essays, will be awarded scholarships in the Science Talent Institute and invited on all-expense trips (transportation, hotel and other arranged expenses paid) to the place the Institute is to be held, and return. The Science Talent Institute will be held at Washington, D. C., February 21-25, 1943, unless in the judgment of Science Service it should be held elsewhere due to war conditions. All contestants invited to the Science Talent Institute will receive the Gold Emblem of Science Clubs of America.

Two contestants, one boy and one girl, coming to the Science Talent Institute will be selected by a board of judges, on the basis of examinations, to receive four-year scholarships of $2,400 each ($600 per year). Alternates will be named.

Eight additional contestants coming to the Science Talent Institute will be selected by a board of judges to receive four-year scholarships of $400 each ($100 per year). Three alternates will be named.

Additional scholarship awards totaling $3,000 will be awarded at the discretion of the judges. Honorable mentions will be awarded.

Committees of judges designated by Science Service will judge the contest, and the decision of these judges shall be final in all cases.

Conditions of Scholarships

Each scholarship may be applied toward a course in science or engineering at a degree-granting institution of higher education selected by the winner and approved by a Scholarship Committee named by Science Service. Science and engineering courses that may be pursued are those encompassed in the fields of activity of the National Academy of Sciences and the National Research Council.

Should any winner be unable for any reason to enter upon the use of a scholarship, the highest ranking alternate named by the judges shall become entitled to receive it under the same conditions as the original winner and the original winner shall thereupon have no further rights in the scholarship.

The use of a scholarship shall begin within a year of the date of award.

One-half of each year's scholarship will be paid at the time of entering upon each year's college work and one-half at the middle of each collegiate year, provided that payments may be accelerated at the discretion of the Scholarship Committee.

If a winner is prevented from using his scholarship award because of entry into governmental service, the award will be held in abeyance and be made available to him or her upon his or her being able to return to the pursuit of his or her collegiate work. In the event that the holder withdraws from collegiate work for any other reason, or the continued use of the scholarship award is disapproved by the Scholarship Committee upon report from the college that progress is deemed unsatisfactory to the college, the right of the scholarship holder to receive any further payments shall be forthwith terminated.

The approval or disapproval and decision of the Scholarship Committee shall in all its respects be final.

ASK YOUR SCIENCE TEACHER

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Every High School has received full information

ASTRONOMY

Two Planets Visible

Jupiter, more brilliant than Saturn, joins it in the November evening sky. Similar names for constellations among scattered peoples suggest common plan.

By JAMES STOKLEY

➤ TO THE BRIGHT STARS of the late autumn evening, which herald the magnificent display that winter always brings, we have this month the added attraction of two bright planets. One is Saturn, which has been seen for some weeks past, while the second is Jupiter, even more brilliant, which now makes an appearance on the accompanying maps for the first time in many months. On these maps are shown the appearance of the heavens at 11:00 p.m. wartime, on November 1, and an hour later for the middle of the month.

A good figure from which to start finding your way about the heavens is that marked "great square," in the constellation of Pegasus, the winged horse, high in the southwest. South of the square, near the horizon, is Piscis Austrinus, the southern fish, with Fomalhaut, one of the most southerly bright stars visible from the United States. Directly west is Aquila, the eagle, with first magnitude Altair. Farther north is the northern cross, marking Cygnus, the swan. The top of the cross, at which is the star Deneb, slants to the right. Under the cross is Vega, in Lyra, the lyre.

Look to the East

It is to the east, however, that we must look for the planets and bright stars that are now returning to view. Near the horizon is Orion, the warrior. You can easily recognize this because of the three stars in a vertical row, which mark Orion's belt. To the left of the belt is Betelgeuse, and to the right is Rigel. Above Orion is Taurus, the bull. Aldebaran is the brightest star in the group, but also passing through it is Saturn, above and even brighter. The magnitude of the planet, which shines, as do all planets, by reflected sunlight, is 0.2, or about two and a quarter times as bright as the star, which is giving off light itself.

To the left of Taurus we find Auriga, the charioteer, with first magnitude Capella. And below Auriga are Gemini, the twins. Castor and Pollux are the two bright stars in this figure, but below them, much brighter than either, is Jupiter. This planet, when so low in the sky, is not as brilliant as when it rises higher, either later in the night, or later in the year.

The origin of the constellation figures is lost in antiquity, but there are many bits of evidence that there was some system in mind among their inventors, whoever they may have been. We find the same names often given to the same star groups, even among widely scattered peoples. And in several cases we find several constellations connected in curious ways.

Wet Constellations

Among those to be seen these November evenings, for example, are a number which have to do in one way or another with water. Just south of the great square of Pegasus is Aquarius, the water carrier. This constellation may be recognized by a group of four stars forming the water jar, which the figure holds. Three of these stars form a triangle, with the fourth in the center. From this jar a stream of water is imagined to be flowing southward, into the mouth of the southern fish, Piscis Austrinus.

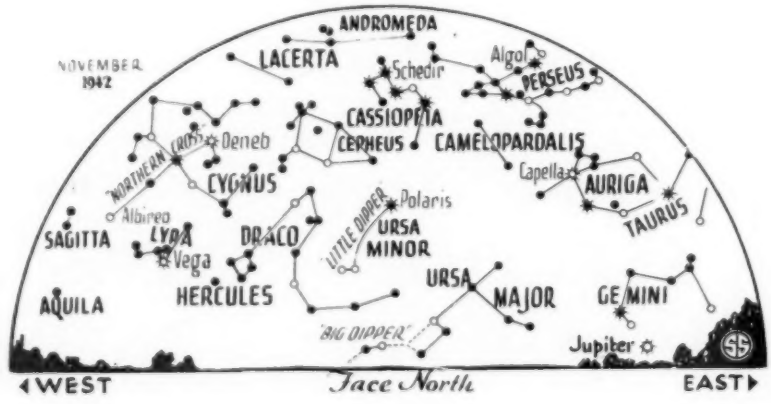
In many ancient nations the figure was pictured in the same way, and even certain of the American Indians called it "Kumbha," which means "a water jar." The Arabs made a slight alteration, in deference to their religious rules against portraying the human figure. To them it was a mule carrying two barrels of water on his back.

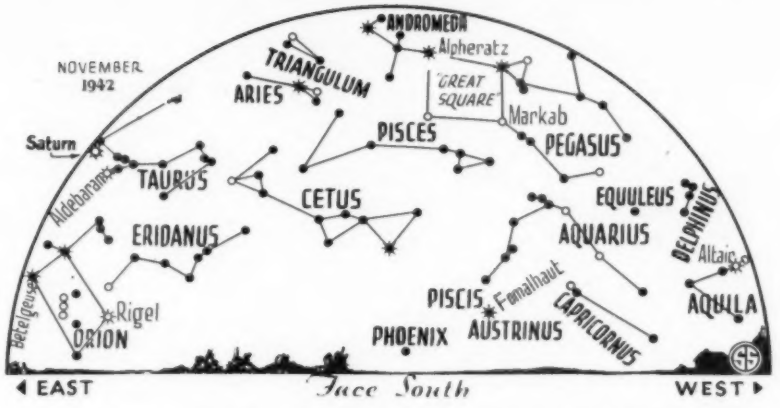
There are other moist constellations, too, also visible these November evenings. There is Capricornus, the sea goat, below Aquarius and to the right of Fomalhaut. There are the fishes, Pisces, which entwine the square of Pegasus, to the left and below. There is Cetus, the whale, below Pisces. And there is Eridanus, the river, which flows from Cetus towards Orion.

Rainy Season a Reason

An explanation, perhaps of the reason that this part of the sky, with all its watery significance, was made into a sort of celestial sea, was that the sun passed through this region in the rainy season. Coincidence would hardly account for it, and this is one reason that many believe the constellation figures to have originated in some one place.

To the student of meteors, those flashes of light across the nighttime sky commonly called shooting stars, the month of November is a time of especial interest. This month brings those of the Leonid showers, which seem to radiate from the figure of Leo, the lion, a group which rises in the east about 1:00 a.m. Any Leonid meteors seen before this time will be seen shooting upwards from the eastern horizon. In the early morning hours, when Leo has risen, they will seem to emerge from that section of the sky in all directions. Actually, however, the meteors, each of which is scarcely larger than a grain of sand, are moving through space in parallel paths, and these paths converge in the distance, like the parallel tracks of a railroad.





On the average, on the night of November 15, when the Leonids will be at their height, about twenty will be seen an hour, though the number is greater after 1:00 a.m. (wartime, or midnight by eastern standard time) than before. This is because we are then on the advancing part of the earth, and meet the meteors head-on. Those reaching us in the earlier hours must catch up to us.

Celestial Time Table for November

Nov.	*EWT*	
1	2:18 a.m.	Moon in last quarter.
	8:21 p.m.	Algol at minimum
4	5:10 p.m.	Algol at minimum
8	11:19 a.m.	New moon.
10	1:00 p.m.	Moon nearest, distance 225,300 miles.
12	1:00 p.m.	Jupiter stationary, starts retrograde or westward motion among stars.
15	2:56 a.m.	Moon in first quarter.
16	Early a.m.	Leonid meteors.
19	1:14 a.m.	Algol at minimum.
21	10:03 p.m.	Algol at minimum.
22	4:24 p.m.	Full moon.
23	10:50 a.m.	Moon passes Saturn.
24	6:52 p.m.	Algol at minimum.
25	7:00 a.m.	Uranus nearest, distance 1,713,000,000 miles.
26	10:00 a.m.	Moon farthest, distance 252,200 miles.
27	7:49 a.m.	Moon passes Jupiter.
30	9:37 p.m.	Moon in last quarter.

Science News Letter, October 31, 1942

GENERAL SCIENCE

"Rules of Reasoning" Urged for Modern World

➤ AMIDST FIGHTING the war, scientists both in the United States and in England are marking the tercentenary of the birth of Sir Isaac Newton. His contributions to optics, mechanics, astrophysics and mathematics had such a radical effect upon scientific progress that they are fundamental to our whole civilization.

Newton's great work was the Principia, pronounced the greatest production of the human mind. In evaluating the impact of Newton upon the world, the new British scientific quarterly, *Endeavour* (October) recommends to scientists today Newton's "rules of reasoning" formulated in 1687, saying: "Strict adherence to them would swiftly dispel the miasma of unfounded hypothesis that still from time to time vitiates the atmosphere of science." The world at large may be similarly admonished.

Here are Newton's rules:

1. We are to admit no more causes of natural things than such as are both true and sufficient to explain their appearances.

2. Therefore to the same natural effects we must, as far as possible, assign the same causes.

3. The qualities of bodies, which admit neither intensification nor remission of degrees, and which are found to belong to all bodies within the reach of our experiments, are to be esteemed the universal qualities of all bodies whatsoever.

4. In experimental philosophy we are to look upon propositions inferred by general induction from phenomena as accurately or very nearly true, notwithstanding any contrary hypotheses that may be imagined, till such time as other phenomena occur, by which they may either be made more accurate, or liable to exceptions.

Science News Letter, October 31, 1942

GENERAL SCIENCE

Smithsonian Research Adapted to War Effort

➤ SMITHSONIAN INSTITUTION research programs have been adapted to the needs of the country at war. Since the United States was thrust into the conflict by enemy aggression, over 500 scientific problems have been presented for solution by the Institution's specialists. They range through all the sciences, from the workings of machines and weapons in its extensive collections to the languages and customs of South Sea Island tribes.

This is the fourth war in which the Smithsonian Institution has functioned as an arm of the government. In previous conflicts queries were mainly in the field of mechanics and invention. In this total war, they run through the whole alphabet of the sciences, from anthropology to zoology.

A special committee has been appointed for the coordinating of the scientific war efforts of the Institution's staff of nearly 100 scientists. Under the chairmanship of Carl W. Mitman, historian of inventions, it comprises also L. B. Aldrich, physicist, Wm. N. Fenton, ethnologist, Herbert Friedmann, biologist, and W. P. True, chief of the Smithsonian editorial division.

Despite immediate urgency of war work, the Institution's normal aims of peaceful, constructive research are not being shelved, declares Secretary Charles G. Abbot. Even the programs that have had to be suspended because of the war are left in such condition that they can be resumed as promptly as possible on the return of peace.

Science News Letter, October 31, 1942

PUBLIC HEALTH

Salesmen Pinch-Hitting For Doctors as Advisers

➤ SALESMEN are successfully pinch-hitting for doctors on the staffs of several health departments and there should be more such use of lay personnel in these days of acute doctor-shortage, Dr. R. A. Vonderlehr, U. S. Public Health Service, told the National Conference on Venereal Disease Control Needs in Wartime at Hot Springs, Ark.

The salesmen, of course, are not treating patients. But men who used to sell vacuum cleaners, electric refrigerators and the like have been given training in the basic facts of venereal disease and are now successfully selling the public on methods of protection against syphilis and gonorrhea.

The syphilis spirochete and the gonococcus are not part-time saboteurs, Dr. Vonderlehr pointed out, urging that all State health departments use full-time salesmen or other trained lay personnel to combat these foes by health education.

Science News Letter, October 31, 1942

METEOROLOGY

Flood Forecasting

Relatively new but exact science is founded on hydraulics and meteorology. Use mathematical formula in which known quantities are height of stream, precipitation.

➤ FLOOD FORECASTING, such as warned residents of recent floods, is a relatively new but exact science.

It is founded on two of the oldest sciences, hydraulics and meteorology, but employs the newest in scientific tools. Meteorologists of the U. S. Weather Bureau compute river stages and flood crests by a mathematical formula in which the known qualities are the height of the stream farther up its course, precipitation along its banks and in the watersheds above, and the river's past performance. Gages at strategic points along the waterways provide the necessary information on river stages and a network of rainfall stations over the entire area furnishes the facts on precipitation.

Gages are of several types. Some, housed in small concrete structures on the river banks, are self-recorders. Their continuous-record sheets, showing the rise and fall of the waters below, are taken out from time to time by official observers.

Other gages are weights on wires, kept in locked boxes, usually attached to the sides of bridges. When information on a river stage is desired, U. S. Weather Bureau officials explain, readings with these gages are taken. Most of the gages, however, are measuring staffs in one form or another, marked off in feet, set up along the streams. A part-time Weather Bureau employe living nearby makes these readings when requested and reports them by telephone or telegraph.

Last word in automatic river gages is a two-part instrument connected by leased telephone wires. The recording end at the river's edge measures the stream's rise and fall and electrically transmits the record to the receiving end of the instrument in the Weather Bureau office some distance away. There an observer keeps the shifting river stages under his eye without leaving his office. During the Ohio River flood in 1936 the long-distance recorder at Pittsburgh was unfortunately put out of commission. Other types of gages also sometimes are damaged or ruined by severe floods. Wire weight gages are sometimes carried away with washed out bridge spans.

How much water there is in a flood can be computed but requires rather complicated mathematics, Weather Bureau officials say. One inch of water spread over an acre weighs 117 tons, which gives a rough idea of the water in a flood.

Chief health dangers to people in flooded areas are typhoid fever and dysentery which spreads if the drinking water becomes contaminated.

The fact that these floods came in fall instead of winter or spring should not occasion surprise. Great floods may occur in the eastern United States at any time of year. Prof. Charles F. Brooks of Harvard University and Maj. Alfred H. Thiessen explain in a Smithsonian report that there is always an extensive warm-water surface nearby from which great volumes of vapor may be transported, while not too far distant throughout the year there are cold surfaces to furnish moving wedges of cold air to elevate the tropical air.

Science News Letter, October 31, 1942

BOOKS

SCIENCE NEWS LETTER will obtain for you any American book or magazine in print. Send check or money order to cover regular retail price and we will pay postage in the United States. If price is unknown, send $5 and the change will be returned. When publications are free, send 10c for handling. Address:

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Irritation of the skin due to *nail polish* is said to be increasing.

Pyrex glass contains boron and silicon, and was made in this country during the first World War when German Jena glass was unobtainable.

● RADIO

Saturday, November 7, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Tuesday, November 3, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04, 9.70 and 11.73 megacycles.

One in a series of regular periods, over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.

Monday, November 2, 9:15 a.m., EWT; 2:30 p.m., CWT; 9:30 a.m., MWT; and 1:30 p.m., PWT

Science at Work, School of the Air of the Americas over the Columbia Broadcasting System, presented in cooperation with the National Education Association, Science Service and Science Clubs of America.

"Power in the Air" will be the subject of the program.

MEDICINE

Source of Solvent May Vary Harmful Effects

➤ THE SOURCE of the petroleum from which industrial solvents, such as benzin, gasoline and solvent naphtha, are obtained plays a part in determining the possible injurious action of these chemicals on those who work with them.

This is one part of the "lesson" Dr. W. F. Von Oettingen, principal industrial toxicologist for the U. S. Public Health Service, gave a group of 50 Connecticut physicians attending the opening class of the new course on Industrial Health and Medicine in War Time at Yale School of Medicine in New Haven, Conn.

The increasing use of hydrocarbons in war industries is creating new health hazards, Dr. Von Oettingen warned.

"The appraisal of these hydrocarbons offers considerable difficulties," he said, "because most of these solvents represent mixtures, sometimes of heterogeneous nature, and because their composition is often incompletely known."

Certain solvents such as benzin, gasoline and solvent naphtha, he pointed out, may vary with regard to their chemical composition according to the source of the petroleum from which they are obtained and therefore vary also with respect to their injurious action.

Dr. Von Oettingen suggested that the older method of describing these substances in terms of their physical properties failed adequately to indicate their potential injurious effects. Therefore, he suggests that appropriate chemical analysis be made in order to detect possible noxious components.

Science News Letter, October 31, 1942

METEOROLOGY

Indian Summer Days

Season of "stalled" air movement and warm weather often coincides with Hallowe'en, and is called after St. Martin in Europe.

See Front Cover

➤ FIRST SHARP FROSTS came early this year over a wide stretch of this country; Indian summer arrived correspondingly soon. The quiet, warm autumn days, with calm air or, at most, moderate, drying winds, are good for hastening the maturing of the crops. They dry the last surplus water out of corn, beans and other seed crops, mellow late apples and pears, and put the finishing touches on pumpkins and hard-shelled squashes left orphans by their frost-killed vines.

There is no fixed date for the arrival of Indian summer, no definite duration for the season. It is not even necessary that a killing frost come first, though that is a usual preliminary. Any warm, quiet spell, following cool or chill fall weather, may be called Indian summer. In some fortunate falls there may be more than one such season.

Meteorological background for Indian summer is a "stalled" high-pressure area somewhere in the Southeast, with a large area of low pressure backed up in or near the Yukon valley. There will then be little air movement off the main body of the continent, and even the low-angled autumn sun can warm up the air. Sometimes Indian summer temperatures rival those of actual summer: 90-degree days are not uncommon, though nights are always cool.

Only in the English-speaking parts of North America is the name Indian summer used. Similar seasons in Europe have names dating back to the Middle Ages, ascribing them to various autumnal saints; usually St. Martin, whose feast comes on Nov. 11. Very often the season coincides with Hallowe'en, which was originally another day of religious observance, being the Eve of All Hallows, or All Saints' Day.

The ancient Greeks had a belief that these calm spells were a gift of the gods for the special benefit of the kingfisher, whose name in Greek is halcyon. The kingfisher was supposed to build a floating nest on the sea, and to sing sweetly to its brood; whence the phrase "halcyon days."

Actually of course the kingfisher builds its nest in a burrow in the stream or lake bank, and is not at all notable for vocal virtuosity. However, that's just some more of cold-blooded modern science's upsetting of pleasant old fancies.

The glistening gossamer threads that float through the air and catch on trees and shrubbery during Indian summer are a source of mystery to many persons. They look just like spiderweb, only you don't see any spiders.

Actually they are spiderwebs, and if you look sharp, at the right time, you may see the spiders. But as a rule you'll have to get up fairly early, and on just the right days. Very tiny spiders, recently hatched, climb out on the ends of of twigs, when very gentle air-warmed currents are rising. They spin these thin threads each with a tiny parachute-like tuft at its end. When the lift becomes great enough, away they sail, seeking their fortunes like true Argonaut adventurers. It is the method of migration-dispersal followed by these spider species.

These glistening threads, too, were the source of an old folk-belief. It very likely is older than Christianity; but at present, and for many generations past, peasants in the Catholic parts of Europe call them various names that all translate as "Mary's threads." Because they are so delicate, and perhaps because they have a bluish glint in the autumn sunlight, they are supposed to be ravelings from Our Lady's veil, drifting down like a benediction on a quiet world.

Science News Letter, October 31, 1942

RESOURCES

Glass Fiber Board Saves War Metals

➤ USE OF a glass fiber board for heat insulation in our fighting ships and auxiliary vessels has, since the beginning of the year, saved 5,500,000 pounds of aluminum and other scarce lightweight materials. The aluminum saved would build 250 flying fortresses.

Science News Letter, October 31, 1942

CHEMISTRY

IN WAR AND PEACE

The latest edition of OUT OF THE TEST TUBE, the fascinating, up-to-date story of chemistry, includes the timely section, "Strategic Raw Materials," and points up chemistry's decisive role in this war.

The distinguished author, Dr. Harry N. Holmes, President of the American Chemical Society, is one of the world's recognized authorities on the subject. Every intelligent person realizes the far-reaching importance of chemistry in shaping the worlds of today and tomorrow. Dr. Holmes sets forth in clear language the romance of chemistry, and explains the fundamental principles of this "vital science" now being used on a scale never before dreamed of.

The general reader, the high school student, the college student, the businessman—all will enjoy and profit from this exciting volume, but more—all will be better able to understand what is going on and what it means. This book will often make clear the *news behind the news.*

"ONE OF THE BEST POPULAR DISCUSSIONS OF CHEMISTRY." — Science News Letter.

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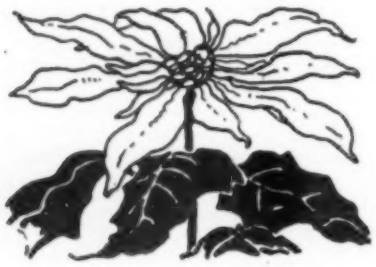
BOTANY

NATURE RAMBLINGS by Frank Thone



Many Called, Few Chosen

➤ RUBBER plants by the score are being recommended every day to authorities in Washington, by citizens anxious to do something to solve the present serious shortage. Moreover, most of them actually contain rubber; there are very few miscues and false leads among them.

People generally have got the idea that any plant with a milky juice, or latex, is a rubber possibility. In general, that is correct. And there are many plant species native to this country, as well as many well-established exotics, that yield latex when cut.

Most frequently suggested among plants, perhaps, is poinsettia. This is natural: almost every household has had a Christmas poinsettia at one time or other, so that its readiness to purl forth latex from the slightest wound, even at the breaking off of a leaf, has been practically universally observed. It grows luxuriantly outdoors, too, in the warmer parts of the country, as along the Gulf Coast and in Southern California.

Names of possible native rubber plants are legion. Milkweed probably tops the list, along with its botanical second cousin, Indian hemp or dogbane. Then there are the various spurges, including the attractive ornamental plant known as snow-on-the-mountain, as well as leafy spurge, which is a terrible weed in northwestern range country. Both plants are poisonous, and it would be a fine thing if an economic use could be found, to encourage their elimination from pasture lands. Other native latex-yielders include wild lettuce, several lobelia species, and even the troublesome wild morning-glory.

With all this wealth of milky-juiced plants, why aren't we using them?

Answers are several, but they all boil down eventually to one: It wouldn't pay. Rubber content in all these latexes is low, and mixed in with most of them are quantities of undesirable resins that would make the resultant rubber too "tacky" for most uses. So it appears better to spend our rubber-emergency money, labor, and critical metals and chemicals on the most promising plants, such as the well-tried tropical rubber trees, guayule, kok-sagyz, Edison's goldenrod and perhaps one or two others. There is no harm in knowing, however, the U. S. Department of Agriculture scientists patiently analyzed all suggested plants, no matter how unpromising, before they passed them over.

Science News Letter, October 31, 1942

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PHARMACY

Chemical Society President Asks for Quinine Hoards

➤ QUININE, now worth several times its weight in gold to American forces fighting in malaria-ridden tropics, is lying idle in little hoards at universities and other institutions all over the country, Dr. Harry N. Holmes, president of the American Chemical Society, is convinced. He has issued an appeal to all laboratory heads having unused stocks of the invaluable drug to turn them in, as an aid to their country at war.

In addition to its unique use in combating malaria, quinine is used by organic chemists in preparing certain compounds of technical interest but no medicinal value. On a search for quinine kept for this purpose, Dr. Holmes asked his fellow chemists, during a recent lecture tour, to look at their stock shelves and see what they had on hand. He found a pound at Yale, at the University of Vermont half a pound and in Boston a pound or more.

He has therefore issued a general appeal to chemists who have quinine to write him, so that he can forward their letters to the proper medical authorities. He does not want to have the quinine sent to him directly, but only information as to its whereabouts, and the willingness of present owners to sell at current prices.

Dr. Holmes' address is Oberlin College, Oberlin, Ohio.

Science News Letter, October 31, 1942

GENERAL SCIENCE

Five Science Libraries En Route to War Prisoners

➤ FIVE LIBRARIES each totaling over 125 scientific books and pamphlets were placed aboard the exchange ship *Gripsholm* and should soon be in the hands of the United Nations prisoners of war held by the Japanese in the Far East.

Collected by the War Prisoners' Aid Service of the Y.M.C.A. and dis-

patched in cooperation with the International Red Cross, these books on medicine, biology, engineering, technology, agriculture and the humanities are expected to be of practical aid to the men of science among the prisoners, as well as allow many of them to continue studies that were interrupted by the war.

The book service to scientists among prisoners of war in all countries is being undertaken as a part of the extensive book service to war prisoners conducted by the World's Committee of the Y.M.C.A. in cooperation with the International Red Cross, the European Student Relief Fund and the International Bureau of Education. Miss Mary Churchill Humphrey of Kentucky helped begin this work when living in Paris at the time of the fall of France and she is now continuing it in this country, as a volunteer with the Y.M.C.A.

Two of the box libraries dispatched to the Far East are intended for Americans, two for British and one for Dutch in Java.

Many of the books were donated by leading libraries and publishers for this purpose.

Science News Letter, October 31, 1942

ENGINEERING

Bad Smells Remedied

Pungent odors emitted by bus motors may be reduced if recommendations of engineers are followed. Due to bad combustion when engine is used as brake.

➤ DISCOVERY of causes and cures for the pungent odors sometimes emitted by bus motors, disagreeable to both passengers and pedestrians, was announced by J. J. Mikita, Harry Levin and H. R. Kichline, three engineers of the Texas Company, Beacon, N. Y., at the meeting of the Society of Automotive Engineers in Tulsa, Okla.

The odors are due to imperfect combustion resulting in the formation of formaldehyde—the disinfectant responsible for "hospital smell"—and other aldehydes. These in sufficient concentration are intensely irritating to the eyes, nose and bronchial tubes. After using their noses for a while in testing exhaust gases, the experimenters found that the amount of aldehydes present in the gas, as determined by chemical analysis, was an even more accurate test of smell and would spare their noses.

The odors can be produced by too lean a mixture of fuel and air, but the investigators found that buses in general use a mixture rich enough to avoid trouble from this cause.

Nevertheless, odors are emitted when the bus is slowing down and the engine is being used as a brake. In this case, the products of combustion left in the cylinders from previous explosions greatly dilute the small incoming charge admitted by the nearly closed throttle. Poor combustion and odors result. They found also that if the idling mixture is too rich, does not bring in enough fresh air at each charge, the odors are increased. This cause is sometimes aggravated by liquid fuel that becomes trapped in the manifold during ordinary running. This fuel re-evaporates when the throttle is shut down and enriches the idling mixture.

No simple adjustment of the engine nor a change of fuel will completely eliminate exhaust odors when the engine is decelerating, the experimenters found. In a bad case, a gasoline of higher volatility will help some but will lower the economy. A better remedy is to clean the manifold of all deposits that may trap liquid fuel. Another remedy is to raise the temperature of the manifold and of the fuel at intake. Finally the experimenters suggested the provision of a mechanical device which would cut off the fuel or the ignition when the bus is slowing down under compression.

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PUBLIC HEALTH

Things That Tend to Make Hearing Aids Expensive

➤ MANY a hard of hearing person goes without a hearing aid because he feels he cannot afford one.

The things that make a hearing aid expensive are given by Miss Josephine B. Timberlake, of the Volta Bureau, in a report on hearing aid clinics published in *Hearing News,* official organ of the American Society for the Hard of Hearing. Here they are:

The salesman's task of helping the client find an instrument that meets his needs; the often difficult job of persuading the hard of hearing person that he should buy and wear an instrument; teaching him to use and care for it.

"Hearing aids will cost less just as soon as the customer is ready to buy an instrument instead of having to be sold one," dealer after dealer has told Miss Timberlake.

Obviously, the hard of hearing can help themselves and each other with this problem.

Help could also be given by hearing aid clinics if they followed the pattern of those established in English hospitals as long ago as 1938. At these the hard of hearing not only got ear examinations, necessary treatment and audiometer tests but consultation with the head of the clinic who recommended a suitable instrument, a trial of the instrument at the clinic and for at least one week at home, and the opportunity to buy the instrument through the clinic at a discount which about halved its price on the public market.

The reason hearing aid manufacturers can give such big discounts to hospitals and clinics is partly because they are spared the appalling amount of time needed to sell instruments to individual patients (the clinic does it for them) and partly because the makers can get suggestions from the clinic as to ways in which their instruments can be improved.

Apparently there are only 12 hearing aid clinics in the United States, and only three of them in hospitals.

Science News Letter, October 31, 1942

LEARN SPANISH
THE LANGUAGE OF TOMORROW'S BUSINESS
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It's easy to learn to speak, read and write Spanish this popular new way... and it takes only ⅕ of the time usually required to master a foreign language. Play Solitaire or play the Course with a member of your family or while you entertain friends. Prepares for the thousands of post-war opportunities that will be available to Spanish-speaking men and women when trade with our Latin-American neighbors is at its peak. Remember... 2, 3 or 4 persons can learn at no extra cost. 4 decks of cards and Cloth-Bound Text Book, only $2 postpaid.
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• New Machines and Gadgets •

❁ *A RADIO receiver that does not re-emit radio waves that are often picked up by other receivers as squeals and howls, has been developed for use on ships at sea. Because the wave broadcast by a bad squawker can be used by enemy craft to locate the ship from which it came, it has been necessary to forbid the use of radio receivers aboard ship. Seamean who do not appreciate the danger are tempted to smuggle radios in. The new receiver, the manufacturer claims, has cut re-radiation to such a low level that it cannot be detected at a distance of more than 25 feet.*

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❁ *A sound muffler based on the principle of a bugle horn used backwards has recently been patented. The bugler, as everyone knows, makes just a little sputtering sound at the mouthpiece and this is magnified by the horn to the loud clear tone of the bugle. Reversely a loud sound entering the mouth of the horn will be reduced to a little squeak at the other end, and can be completely suppressed by a small amount of sound absorbing material.*

Science News Letter, October 31, 1942

❁ *TO RENDER the headlights and taillights of army jeeps and other vehicles invisible from the air, yet provide enough light for driving, the lenses shown in the illustration are fitted over the lamps. They are made of the same acrylic plastic material that is widely used for bomber noses, gun turrets and similar purposes. They are weatherproof.*

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❁ *BULL CONTROL is the stated object of a recent patent. The control consists of a stick, the lower end of which is fastened to the nose ring, the middle to a band around the bull's head, while the upper end projects some distance above the bull's head. The idea is that if the bull attempts to tear through or under a gate or fence, he will be discouraged by a tweak of the nose.*

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❁ *LIPSTICK, compact and mirror are combined in a device recently patented which can be operated entirely with one hand while the other carries a handbag and bundles. Pushing the lipstick out, releases the compact folded against it, which swings out. Then the lid carrying the mirror flies open. In applying the lipstick, the mirror is then substantially parellel to the face.*

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❁ *ICE ON AIRPLANE wings is signalled to the pilot and the amount formed is measured by a new electronic device. It also automatically turns on the de-icers the moment they are needed.*

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If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 128.*

• Books Just Off the Press •

ACTION AGAINST THE ENEMY MIND — Joseph Bornstein and Paul Milton—*Bobbs-Merrill,* 294 p., $2.50. Psychological warfare from the point of view of newspapermen, one of whom is now with the OWI.

ARCHAEOLOGICAL AND GEOLOGICAL INVESTIGATIONS IN THE SAN JON DISTRICT, EASTERN NEW MEXICO—Frank H. H. Roberts, Jr.—*Smithsonian,* 30 p., 9 plates, 25c.

BIOLOGY FOR HIGH SCHOOLS — Sister M. Dafrose—*Kenedy,* 797 p., illus., tables, $2.40; schools, $1.92.

CHEMICAL ELEMENTS—I. Nechaev; Beatrice Kinkead, tr.—*Coward-McCann,* 223 p., $2.50. A story, for young people, of the discovery of the chemical elements and of their discoverers. The author is a young Russian chemist, and the lining papers have portraits of the scientists mentioned in the book.

4000 YEARS OF TELEVISION — Richard W. Hubbell — *Putnam's* 256 p., illus., $2.25. A history of television explaining inventions in their order of appearance, the use of television as an instrument of war, and the future use in industry.

GREEN FIRE—Peter W. Rainier—*Random House,* 296 p., $2.75. Adventures of a mining engineer in the Andes.

GUERRILLA WARFARE—"Yank" Levy—*Penguin Books,* and *Infantry Journal,* 120 p., 25c.

HOW TO DRESS IN WARTIME — Winifred Raushenbush—*Coward-McCann,* 198 p., $2.00.

THE MENTALLY ILL AND PUBLIC PROVISION FOR THEIR CARE IN ILLINOIS—Stuart K. Jaffary—*Univ. of Chicago Press,* 214 p., $1.25.

METEOROLOGY FOR SHIP AND AIRCRAFT OPERATION — Peter E. Kraght — *Cornell Maritime Press,* 373 p., illus., $3.00. A textbok for aviators, aerial navigators, and mariners. Recommended for students who intend aeronautical, or merchant marine careers.

THE ORIGIN OF THE CAROLINA BAYS — Douglas Johnson—*Columbia Univ. Press,* 341 p., $4.50.

WISCONSIN BIRDS—N. R. Barger, Elton E Bussewitz, Earl L. Loyster and others — *Wis. Society of Ornithology,* 32 p., 25c.

SECRETS OF VOICE PRODUCTION — Edwin Hopkins—*Edwin Hopkins,* 11 p., 75c.

WONDERS TO SEE — Lillian Hethershaw — *World Book Co.,* 284 p., illus., $1.00. A science textbook, the first of a three-book series, for intermediate grades. Nice illustrations, some in color.

• First Glances •

➤ AN EXCELLENT and comprehensive study of AFTEREFFECTS OF BRAIN INJURIES IN WAR is written by Kurt Goldstein (*Grune and Stratton,* $4). The author, a neurologist, was for more than ten years head of a German hospital for soldiers with brain injuries and of an institution where after-effects of such wounds were studied. The rehabilitation and re-education of soldiers with wounds in the brain is one of the most serious problems of war medicine and psychology. Even such a slight scalp wound that the soldier can pick out the missile himself may have serious, or even fatal effects, if not given expert care. Dr. Goldstein's experience with over 2,000 patients is invaluable. Another case where Hitler's loss is America's gain.

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